

APPENDIX A: THE PASO DEL NORTE ENVIRONMENTAL MONITORING PROJECT

ABOUT THE PROJECT

The Paso del Norte Environmental Monitoring Project addresses the critical issue of data processing and dissemination for a border area between the United States and Mexico known as “El Paso del Norte”.

This project provides the public with timely air quality, traffic, and weather information for the Paso del Norte region. Because the region spans the U.S.- Mexico border and is home to a rapidly growing and bilingual population, the project was presented with unique challenges and serves as a prototype for international involvement and cooperation.

Three types of environmental data are collected in the Paso del Norte region: air quality, traffic, and weather. Air quality data for ground-level ozone, carbon monoxide (CO), and particulate matter are used to inform the public about increased air pollution and associated health risks. Traffic information obtained through roadway monitoring is used to inform the public about volume delays, road construction delays, accidents, and other impedances. In addition, traffic data are incorporated into air quality analyses. This synthesis is critical because vehicles, particularly idling vehicles at border crossings, are a major contributor to air quality problems in the region. Weather information is practical both as helpful day-to-day information and as an air pollution indicator.

The Paso del Norte Environmental Monitoring Project aims to improve the dissemination of information through:

- Coordination among various agencies, institutions, organizations, and broadcasters within the Paso del Norte region.
- Development of standards for sharing information and displaying it to the public and decision-makers in the region.
- Establishment of a communications infrastructure for timely environmental information.
- Public outreach programs that improve local understanding of individual actions that can be done to improve the quality of the environment.
- Education of future generations by developing opportunities for students to conduct research and become involved in the improvement of the environment.

PROJECT PARTNERS

The City of El Paso is the lead agency for the Paso del Norte Environmental Monitoring Project. Project partners include the University of Texas at El Paso (UTEP), the Texas Natural Resource Conservation Commission, the El Paso City County Health Management District, the New Mexico Environment Department, and Departamento de Ecología en Ciudad Juárez, Chihuahua, Mexico.

The support of these agencies and institutions arose from the official support of the Joint Advisory Committee (JAC), a bi-national organization that meets quarterly to review and make recommendations related to projects to improve air quality in the Paso del Norte region. Because the JAC includes representatives from federal, state, and local governments, educational institutions, industry, and others, its endorsement helps ensure cooperation and on-going support from the many entities needed to implement the Paso del Norte project.

MONITORING

Air Quality

Twenty-five existing continuous air monitoring stations (CAMS) are used to collect air quality data: 14 in Texas, six in New Mexico, and five in Mexico. Data are collected every 5 minutes at the monitoring stations. CAMS in the Paso del Norte region are operated by four separate government agencies, serving three states in two countries. Monitoring station calibration occurs every 28 days during the colder months, and span checks are performed once a week.

Traffic

In the El Paso Metropolitan area, 600 existing traffic sensors collect speed and volume data and 34 existing cameras provide video images. Traffic volume information and traffic video images are collected at 5-minute intervals at fixed locations in El Paso and at fixed locations on some of the highways in the area. Volume and speed measurements are summarized on an hourly basis, and data sets and displays are refreshed on the project's Web site every 60 minutes. The project team updates the traffic video images on the Web site every 15 minutes using an automated modem system.

Weather

Wind speed, wind direction, and temperature data are collected at the CAMS in the region and are then transferred and processed with the air quality data. Other weather data from the National Weather Service (NWS) in Santa Teresa, New Mexico, are retrieved at a server at UTEP by means of an ftp connection. Visibility images from NWS satellite links and the UV index forecast from EPA's Sun Wise Program Web site also are transferred to UTEP. These data are processed through a series of algorithms and redisplayed. Current temperature, UV intensity, relative humidity, wind speed, and heat index readings appear in digital form on the Paso del Norte project Web site. Graphs showing changes in various weather parameters also are on the Web site.

DATA MANAGEMENT

Air quality data, traffic volume data, traffic video images, weather data, and static and live images from a Webcam are transferred from monitoring locations, hubs, and Web sites run by multiple agencies. As with other aspects of the Paso del Norte project, communications between agencies is vital to processing the timely environmental data. UTEP collects and processes the data from the different agencies to upload onto the project Web site. Data storage for the Paso del Norte project includes an ftp server and access via interactive searches and select features provided on the project's Internet server. Queries can be performed in the air and traffic databases to identify data sets of interest and download them using anonymous ftp file transfer.

OUTREACH AND EDUCATION

There are five major elements of the Paso del Norte project's outreach program: the project's Web site, Ozone Action Days, the Community Scholars Program, television outreach, and digital information readouts. The project's Web site (<http://www.ozonemap.org>), which contains all of the collected data and is presented in both English and Spanish, is the primary vehicle for communicating timely information. This Web site also includes a link to Ozone Action Days, a Webpage that describes an ozone action day, provides information on how to protect yourself on such days, and provides recommendations on what not to do (e.g., avoid driving at lunchtime) on an ozone action day. The Community Scholars Program is a grant-funded, non-profit summer internship program designed to foster leadership skills in local high school students by involving them in research on environmental issues. The regional broadcast affiliate, KFOX, broadcasts air quality information and announces ozone action days during their evening broadcasts, and a local television station (Channel 56) and Universidad Autonoma de Cd. Juárez provide daily visualizations of carbon monoxide and ozone levels in Cd. Juárez during the evening news. In addition, digital readouts located in strategic areas are used to provide information on environmental and traffic conditions.

In order to make the data provided in these outreach activities as accessible as possible, the Paso del Norte project uses data visualization tools to graphically depict information. Examples include 3D maps, color-coding, tables and charts, GIS, and live and static images. Graphic representations of environmental data are used on Web sites, in reports and educational materials, and in other outreach and communication initiatives. All of these materials can be viewed in English or in Spanish, and certain formats are downloadable by the public or by local television stations for rebroadcast.